

2. "Note on the Occurrence of a new Species of *Iguanodon* in the Kimmeridge Clay at Cumnor Hurst, three miles west of Oxford." By Prof. J. Prestwich, M.A., F.R.S., F.G.S.

The pit in which the occurrence of *Iguanodon* was discovered was worked in Kimmeridge Clay at the foot of an outlying mass of Lower Greensand forming an isolated hill. The Portland beds, which occur at Shotover, are here wanting. The bones were found in a thin sandy seam intercalated in the clay, and traversing the hill, at least 15 feet below the Greensand. The skeleton was probably almost entire; but, as attention was not directed to it until nearly all the clay had been removed, many bones were lost and others injured. Several vertebræ of *Ichthyosaurus* were found in the same seam, and the characteristic *Gryphæa virgula* occurred in profusion. The clay above and below contained fossils of Kimmeridge types. The author stated his opinion that land probably lay to the south-west of the Oxford district.

3. "On *Iguanodon Prestwichii*, a new Species from the Kimmeridge Clay." By J. W. Hulke, Esq., F.R.S., F.G.S.

In this paper the author described in detail the remains of *Iguanodon* found at Cumnor Hurst in the Kimmeridge Clay, as described in the preceding paper. They illustrated nearly every part of the skeleton of an immature individual, adding greatly to our knowledge of the variation of the vertebræ in the several regions of the vertebral column, and of the structure of the head and hind limbs. In the latter, both the tibia and the fibula articulate (as in embryo birds) with the os calcis, which bone is now first identified in *Iguanodon*. The sacral vertebræ were only four in number; and the species further differed from the Wealden *Iguanodon Mantelli* in the simpler character of the serration of the teeth, of which the lamellæ are not mamillated, and in having the vertebræ of the trunk and sacrum not so compressed. The author named the species *Iguanodon Prestwichii*.

## MISCELLANEOUS.

### *On the Organization and Development of the Gordii.*

By M. A. VILLOT.

IN again treating of this interesting subject, which has constantly occupied me for the last eight years, I propose to make known certain facts which had escaped my former observations, and to remove the doubts which the latter have left in the minds of several naturalists.

The detailed descriptions and the figures that I have given of the first larval form of *Gordius* have been recognized as correct by the observers who have followed me. I have, however, an omission to make good. I forgot to say, in my monograph, that the three styles with which the trunk is armed are moved by the same number of

special muscles. These three muscular ribbons start from the base of the styles, and are inserted upon the well-marked constriction which separates the body from the tail. They cause the movements of protraction and retraction of the trunk, which are completely independent of those performed by the rest of the head. The latter are effected by means of the cylindrical subcutaneous muscle, which at the same time gives motion to the circlets of hooks.

I insist upon this fact, that the first larval form of the *Gordius* differs greatly from that of the Nematoid worms. In these latter, even including the aberrant genera (*Mermis* and *Sphærulearia*), the embryo and the larva are represented by the type of the Anguillulæ (*Rhabditis*). Now it would need a great effort of the imagination to refer the larva of *Gordius* to this type. The order Gordiacei, as established by Von Siebold, cannot therefore be retained by zoologists, who nowadays attach the greatest importance to the characters furnished by embryogeny and morphogeny.

The second larval form differs from the first as much as the latter differs from the sexual form. It is characterized essentially by the loss of the styles, the shedding of the hooklets, and the disappearance of the annulations.

Each of the two larval periods includes two very distinct phases, that of parasitism and that of aquatic existence; but these two phases do not in each case occur in the same order. In its first larval form the young *Gordius* passes from aquatic life to the state of a parasite; in its second larval form it quits its post to return to the water. The two phases of parasitism, although immediately succeeding one another, differ essentially. So long as the first phase lasts, the young worm, enclosed in its cyst, remains motionless and does not appear to take any nourishment or to grow at all. During the second, on the contrary, it is free, lives at the expense of its host, and becomes very rapidly developed.

It has been supposed hitherto that the passage from the first larval form to the second is connected with a migration, a change of host. The observers who saw larvæ of *Gordius* encyst themselves in larvæ of Ephemeriidæ supposed that the Dyticidæ swallowed these encysted larvæ with their prey, and that the young *Gordii* developed themselves in the visceral cavity of their new host. For this hypothesis, which is still classical, I substituted another which appeared to me of more general application. I said that the *Gordii* parasitic upon fishes proceed from larvæ previously encysted in various species of Tipulidæ, the larvæ of which likewise lived in the water; and I founded my argument upon the consideration that fishes are, in general, very fond of those insects. Both hypotheses are contradicted by the well-ascertained fact that the two larval forms of the *Gordii* live indifferently in the various aquatic hosts indicated. I therefore now regard it as very probable that the two phases of the parasitism of the *Gordii* are accomplished in one and the same host.

Observation also proves that the larvæ of the *Gordii* do not select their host. They encyst themselves and become developed in the most different animals (Batrachians, fishes, Crustaceans, Arachnids,

insects, and mollusks). It is therefore by no means the case, whatever may have been said, that the larvæ of the *Gordii* are parasites peculiar to insects. As regards fishes, these, as I have asserted, are perhaps the animals which harbour these larvæ most frequently and in the greatest number. It is only necessary to open a few individuals belonging to the species that I have indicated to become convinced of the reality of this fact.

It is none the less evident that the *normal hosts* of the *Gordii* are all animals exclusively or temporarily aquatic. Water is, in fact, the normal medium of the *Gordii*. It is in the water that they become adult and that they reproduce; it is in the water that their larvæ live at first on their escape from the egg; and it is also in the water that their migration must be effected.

The parasitism of the larvæ of the *Gordii* in terrestrial animals has an essentially abnormal and exceptional character; and in order to explain it we must have recourse to very peculiar conditions. In countries of plains these are realized by the periodical inundations of the great streams and by the systematic irrigations to which the natural or artificial meadows are subjected throughout the summer. In the mountains, and upon inclined ground generally, matters are different. Brooks and torrents only too frequently escape from their beds. The storms of rain which are so frequent in these regions form actual sheets of water which carry away every thing in their course—soil, plants, and animals. Many terrestrial insects (Carabidæ, Mantides, grasshoppers, and locusts) must perish in this way; and the worms which they contain, being set at liberty, have only to abandon themselves to the stream. Thus we often find young *Gordii* in the very primitive reservoirs, hollowed out of the trunk of a tree, which serve the mountaineers to collect drainage-water.

The frequency of the larvæ of *Gordii* in insects, which is usually objected against my views, is more apparent than real. It must be borne in mind that the insects are represented by a great number of species, and that they are sought after by most naturalists.—*Comptes Rendus*, June 28, 1880, p. 1569.

*On a new Species of Dasyurus from New Guinea.*

By M. A. MILNE EDWARDS.

The collections which have been made of late years in New Guinea indicate resemblances previously unsuspected between the fauna of that great island and that of Australia. Many mammals which were thought to be peculiar to New Holland have been found upon the land of the Papuas; and among the more remarkable I may cite the Echidnas, represented by two very distinct forms, the true Phalangers and the dwarf and flying Phalangers, the Cuseus, the Kangaroos, the Bandicoots, and the Phascogales. But hitherto the Australian true Carnivorous types had not been indicated in New Guinea. This gap has just been filled up by the discovery at the Arfak Mountains of a representative of the genus *Dasyurus*. Several species of this small group were already known in Australia—some attaining the size of a cat (such as *Dasyurus*